

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for allocating bandwidth in a network appliance where the network appliance includes a plurality of guaranteed bandwidth buckets used to evaluate when to pass traffic through the network appliance, the method comprising:

~~providing a shared bandwidth bucket associated with each of the plurality of the guaranteed bandwidth buckets;~~

~~determining, by the network appliance, that a first policy is to be applied to a packet stored in an input queue of the network appliance;~~

~~determining, by the network appliance and based on determining that the first policy is to be applied to the packet, whether a first bandwidth in a maximum bandwidth bucket is sufficient to allow the packet to pass immediately through the network appliance, where the first bandwidth is allocated to the maximum bandwidth bucket based on a maximum bandwidth allocation associated with the first policy;~~

~~allocating bandwidth to the shared bandwidth bucket based on an underutilization of bandwidth in any one of the plurality of guaranteed bandwidth buckets;~~

~~determining, by the network appliance and when the first bandwidth is determined to be sufficient to allow the packet to pass immediately through the network appliance, whether a second bandwidth in one of [[the]] a plurality of guaranteed bandwidth buckets is sufficient to allow ~~traffe the packet~~ to pass immediately through the network appliance, where the second bandwidth is allocated to the one of the plurality of guaranteed bandwidth buckets based on a~~

guaranteed bandwidth allocation associated with the first policy;

transferring, by the network appliance, a shared bandwidth from [[the]] a shared bandwidth bucket to the one of the plurality of guaranteed bandwidth buckets when the second bandwidth in the one of the plurality of guaranteed bandwidth buckets is not sufficient to allow ~~traffic~~ the packet to pass immediately through the network appliance, where the shared bandwidth is allocated to the shared bandwidth bucket based on an underutilization of bandwidth in any one of the plurality of bandwidth buckets;

determining, by the network appliance and when the second bandwidth or the shared bandwidth is sufficient to allow the packet to pass immediately through the network appliance, whether a different policy is to be applied to the packet;

determining, by the network appliance and when the different policy is to be applied to the packet, whether a third bandwidth in another one of the plurality of guaranteed bandwidth buckets is sufficient to allow ~~traffic~~ the packet to pass immediately through the network appliance, where the third bandwidth is allocated to the other one of the plurality of guaranteed bandwidth buckets based on another guaranteed bandwidth associated with the different policy; and

transferring bandwidth from the shared bandwidth bucket to the other one of the plurality of guaranteed bandwidth buckets when the third bandwidth, in the other one of the plurality of guaranteed bandwidth buckets, is not sufficient to allow ~~traffic~~ the packet to pass immediately through the network appliance, where the one of the plurality of guaranteed bandwidth buckets is allocated a first amount of bandwidth and the other one of the plurality of guaranteed bandwidth buckets is allocated a different amount of bandwidth.

2. (Previously Presented) The method of claim 1, where the shared bandwidth bucket is a token bucket.
3. (Previously Presented) The method of claim 1, where the plurality of guaranteed bandwidth buckets are token buckets.
4. (Previously Presented) The method of claim 1, where the plurality of guaranteed bandwidth buckets are credit/debit buckets.
5. (Currently Amended) The method of claim 1, where each of the plurality of guaranteed bandwidth buckets is associated with a different traffic shaping policy.
6. (Currently Amended) The method of claim 1, where the ~~plurality of guaranteed bandwidth buckets~~ the first policy and the second policy are associated with a single traffic shaping policy.
7. (Currently Amended) The method of claim [[5]] 6, where the single traffic shaping policy screens based on IP address associated with the packet.
8. (Currently Amended) The method of claim 7, where the single traffic shaping policy screens based on ~~a~~ source IP address associated with the packet.
9. (Currently Amended) The method of claim 7, where the single traffic shaping

policy screens [[are]] based on a destination IP address associated with the packet.

10. (Currently Amended) The method of claim 7, where the single traffic shaping policy screens [[are]] based on protocol type associated with the packet.

11. (Currently Amended) The method of claim 7, where the single traffic shaping policy screens [[are]] based on UDP/TCP port number associated with the packet.

12. (Currently Amended) The method of claim 7, where the single traffic shaping policy screens [[are]] based on [[the]] a type of service requested associated with the packet.

13. (Currently Amended) The method of claim 5, where each of the different traffic shaping ~~policy screens are~~ policies screen based on traffic content of the packet.

14. (Currently Amended) A method for allocating bandwidth in a network appliance, the method comprising:

defining a guaranteed bandwidth allocation for a first policy for passing ~~traffic a~~ packet through the network appliance, where defining the guaranteed bandwidth allocation includes including using a first bucket to allocate the guaranteed bandwidth;

defining a different guaranteed bandwidth allocation for a second policy for passing ~~traffic the packet~~ through the network appliance, where defining the different guaranteed bandwidth allocation includes including using a different bucket to allocate the different guaranteed bandwidth;

sharing excess bandwidth developed from an underutilization of the guaranteed bandwidth allocated to the first bucket and the different guaranteed bandwidth allocated to the different bucket including:

providing a shared bandwidth bucket associated with the first bucket and the different bucket;

borrowing bandwidth from the shared bandwidth bucket by the first bucket when the first bucket has insufficient bandwidth to allow ~~traffic~~ the packet to pass immediately through the network appliance; and

borrowing bandwidth from the shared bandwidth bucket by the different bucket when the different bucket has insufficient bandwidth to allow ~~traffic~~ the packet to pass immediately through the network appliance.

15. (Currently Amended) An apparatus for allocating bandwidth in a network appliance where the network appliance includes a plurality of guaranteed bandwidth buckets used to evaluate when to pass ~~traffic~~ a packet through the network appliance, each of the plurality of guaranteed bandwidth buckets being allocated different amounts of bandwidth, the apparatus comprising:

a shared bandwidth bucket associated with the plurality of guaranteed bandwidth buckets;

one or more components to allocate bandwidth to the shared bandwidth bucket based on an underutilization of the different amounts of bandwidth allocated to the plurality of guaranteed bandwidth buckets; and

a scheduler operable to:

evaluate ~~[[a]] the~~ packet to determine ~~[[if]] whether to apply~~ a traffic shaping policy ~~should be applied~~ to the packet,

determine, based determining to apply the traffic shaping policy, whether a maximum bandwidth bucket comprises sufficient capacity to support a transfer of the packet through the network appliance, where bandwidth is allocated to the maximum bandwidth bucket based on a maximum bandwidth associated with the traffic shaping policy,

evaluate, based on the maximum bandwidth bucket being determined to
comprise the sufficient capacity, a guaranteed bandwidth bucket, of the plurality of guaranteed bandwidth buckets, associated with ~~an identified~~ the traffic shaping policy,

determine when the guaranteed bandwidth bucket, of the plurality of guaranteed bandwidth buckets, associated with the ~~identified~~ traffic shaping policy ~~[[has]]~~
comprises insufficient capacity to support ~~[[a]] the~~ transfer of the packet through the network,
and

borrow bandwidth from the shared bandwidth bucket by the guaranteed bandwidth bucket, of the plurality of guaranteed bandwidth buckets, to allow ~~traffic the packet~~ to pass immediately through the network appliance.

16. (Currently Amended) A network device comprising:

a first bucket to receive tokens at a first information rate, where the first information rate corresponds to a maximum bandwidth allocation associated with a packet to be transferred through the network device;

a second bucket to receive tokens at a different information rate, where the different information rate corresponds to a guaranteed information rate associated with the

packet;

a third bucket to receive tokens at a third information rate, where the third information is different than the first information rate and the different information rate and corresponds to another guaranteed information rate associated with the packet;

a ~~third~~ fourth bucket to receive extra tokens from the second bucket and the third bucket; and

a scheduler to:

determine ~~[[if]] whether a size of traffic the packet received at the network device~~ exceeds a number of tokens stored in the first bucket,

determine, when the size of the ~~traffic packet~~ does not exceed the number of tokens stored in the first bucket, ~~[[if]] whether~~ ~~[[a]] the size of the traffic packet~~ exceeds a number of tokens stored in the second bucket, ~~[[and]]~~

transfer, when the size of the ~~traffic packet~~ exceeds the number of tokens stored in the second bucket, an appropriate number of tokens from the ~~third~~ fourth bucket to the second bucket so that the second bucket includes a number of tokens that equals or exceeds the size of the ~~traffic packet~~,

determine, whether the size of the packet exceeds a number of tokens stored in the third bucket, and

transfer, when the size of the packet exceeds the number of tokens stored in the third bucket, another appropriate number of tokens from the fourth bucket to the third bucket so that the third bucket includes a number of tokens that equals or exceeds the size of the packet.

17. (Currently Amended) The network device of claim 16, where the scheduler is further to:

cause the ~~traffic~~ packet to be forwarded after the transfer; and

decrement the number of tokens in the first bucket, the second bucket, and ~~second buckets~~ the third bucket based on the size of the ~~traffic~~ packet.

18. (Currently Amended) The network device of claim 16, where the scheduler is further to:

determine ~~[[if]] whether~~ the ~~third~~ fourth bucket includes the appropriate number of tokens and the other appropriate number of tokens, and

prohibit the traffic from being forwarded when the ~~third~~ fourth bucket includes less than the appropriate number of tokens and the other appropriate number of tokens.

19. (Currently Amended) The network device of claim 16, further comprising:

one or more input ports to receive traffic from a network, each of the one or more input ports including another first bucket, another second bucket, another third bucket, another fourth bucket, and another scheduler.

20. (Currently Amended) A method comprising:

~~receiving traffic;~~

determining, by a network device, ~~[[if]] whether~~ a policy is to be applied to ~~[[the]]~~ traffic;

determining, by the network device and when the policy is to be applied to the

traffic, [[if]] whether a size of the traffic exceeds a number of tokens in a first bucket, the first bucket being associated with the policy;

determining, by the network device and when the size of the traffic does not exceed the number of tokens in the first bucket, [[if]] whether the size of the traffic exceeds a number of tokens in a second bucket;

determining, by the network device and when the size of the traffic exceeds the number of tokens in the second bucket, [[if]] whether a third bucket includes an appropriate number of tokens that, when added to the number of tokens in the second bucket, would equal or exceed the size of the traffic;

transferring, by the network device, the appropriate number of tokens from the third bucket to the second bucket when the third bucket includes the appropriate number of tokens;

determining, by the network device, [[if]] whether a different policy is to be applied to the traffic;

determining, by the network device and when the different policy is to be applied to the traffic, [[if]] whether a size of the traffic exceeds a number of tokens in another first bucket, the other first bucket being associated with the different policy;

determining, by the network device and when the size of the traffic does not exceed the number of tokens in the other first bucket, [[if]] whether the size of the traffic exceeds the number of tokens in another second bucket;

determining, by the network device and when the size of the traffic exceeds the number of tokens in the other second bucket, ~~if another~~ whether the third bucket includes an appropriate number of tokens that, when added to the number of tokens in the other second

bucket, would equal or exceed the size of the traffic;

transferring, by the network device, the appropriate number of tokens from the ~~other~~ third bucket to the other second bucket when the ~~other~~ third bucket includes the appropriate number of tokens; and

forwarding, by the network device, the traffic after the transferring of the appropriate number of tokens from the ~~other~~ third bucket to the other second bucket.

21. (Cancelled)

22. (Cancelled)